U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Reducing Energy Costs and Carbon Emissions Through Federal Energy Performance Contracts

March 28, 2022

FEMP Federal Energy Management Program

Welcome!

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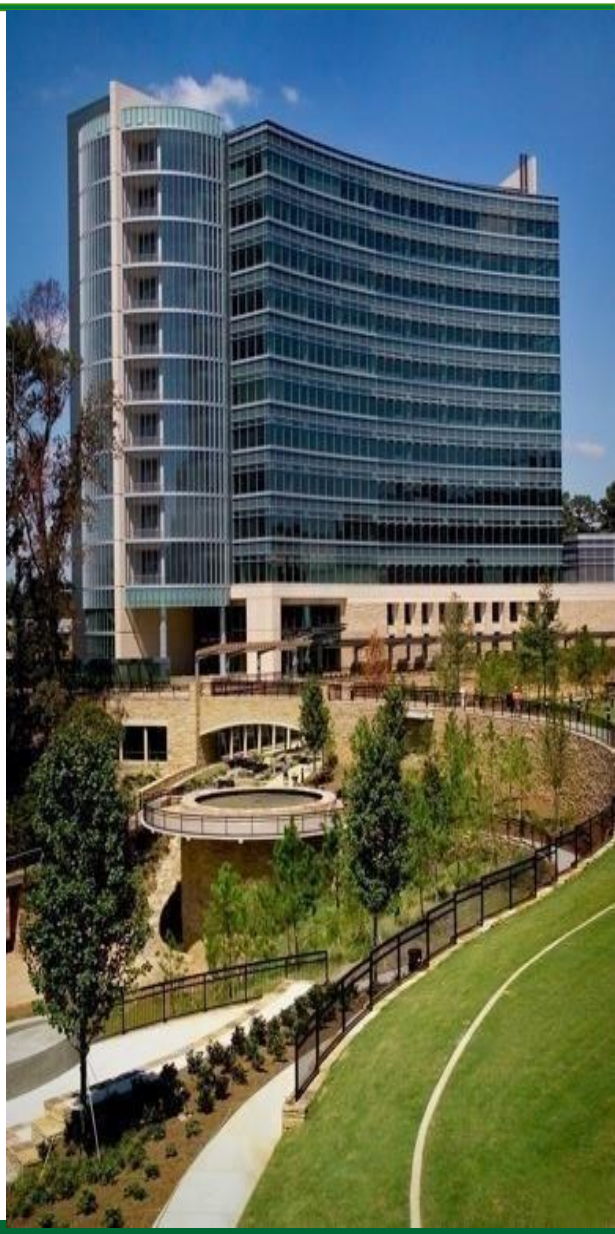
DOE Federal Energy Management Program

Mission

The Federal Energy Management Program (FEMP) works with its stakeholders to:

- Enable federal agencies to meet energy-related goals
- Identify affordable solutions
- Facilitate public-private partnerships
- Provide energy leadership to the country by identifying and leveraging government best practices



FEMP Performance Contracting Impact

Since 1998, performance contracts have helped agencies reduce costs, energy intensity, and GHG emissions of their facilities.

Over $11.45 billion in project investments awarded
(DOE ESPC IDIQ, ESPC ENABLE, UESC)

ENERGY

Estimated over
41.9 trillion BTU
reduced annually

ECONOMIC

Estimated over
91,600 job-years
(direct jobs)

ENVIRONMENTAL

Estimated over
2.8 million metric tons CO_2e*
reduced annually

Why Do Federal Agencies Choose Performance Contracts?

Performance contracts enable agencies to leverage financing to meet energy- and water-related goals and requirements, including:

- Statutory requirements and executive orders
- Agency-specific energy program priorities
- Site requirements and facility needs
- Opportunities identified by facility and energy audits

Federal Energy Management Laws and Requirements

www.energy.gov/eere/femp/federal-energy-management-laws-and-requirements

New Federal Goals and Requirements

Energy Act 2020:

- Requirements related to implementation of lifecycle cost effective (LCE) energy and water conservation measures identified in facility audits (use of performance contracting to address at least 50% of LCE measures identified)

EO 14057: Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability

- Net-zero emissions from overall federal operations by 2050
- 100% carbon pollution-free electricity (CFE) by 2030, including 50 percent 24/7 CFE
- 100% zero-emission vehicle (ZEV) acquisitions by 2035, including 100% zero-emission light-duty vehicle acquisitions by 2027;
- A net-zero emissions building portfolio by 2045, including a 50% emissions reduction by 2032; and
- A 65% reduction in scope 1 and 2 GHG emissions by 2030 from 2008 levels;

EO 14008: Tackling the Climate Crisis at Home and Abroad

- Use the power of procurement to increase the energy and water efficiency of installations, buildings, and facilities and ensure they are climate-ready

What are Energy Performance Contracts?

Contracts that allow agencies to do energy projects with no up-front costs and no additional appropriations from Congress.

Utility/ESCO

- Develops and installs energy/water conservation measures (ECMs)
- Resulting cost savings to cover project costs

Agency

- Pays utility or ESCO over term of contract from savings
- Contract administration → life of contract

FEMP Federal Energy Management Program

- Provides support upon request: technical, financing, and contracting expertise

Key Features and Types of Contracts

Purpose: Achieve energy savings & ancillary benefits

- Max contract term is 25 years (starting with task order award)
- Financing and appropriations may be combined
- Utility/ESCO is responsible for obtaining financing
- Contracts are firm-fixed-price
- Multiple sites may be included in a single task order
- May include O&M, repair & replacement

Energy Savings Performance Contract (ESPC)

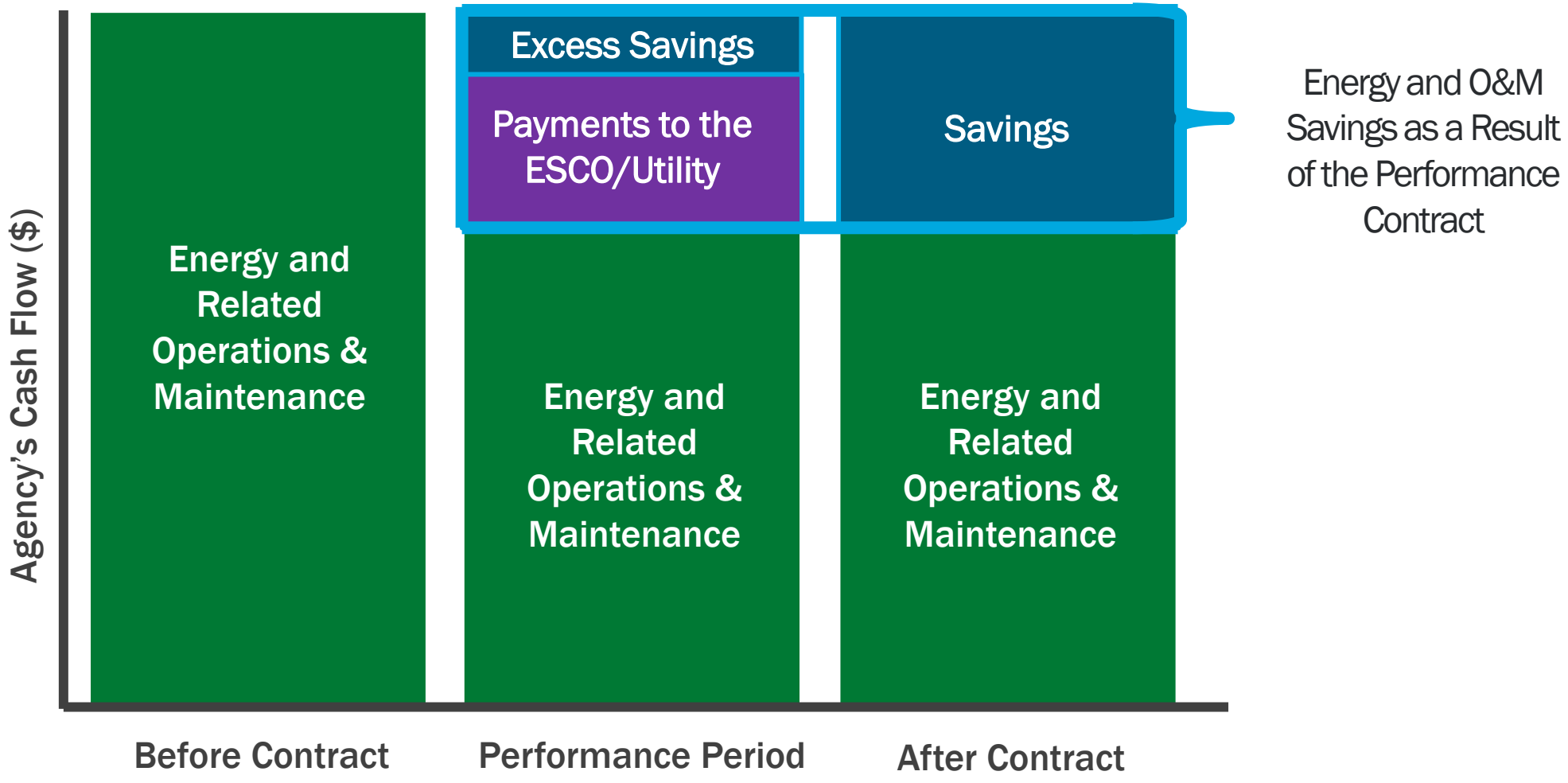
- Prime contractor = Energy Service Company (ESCO) (DOE IDIQ, ENABLE, Army MATOC)
- Savings guarantees and M&V are required – savings must exceed payments each year
- ESCO is responsible for O&M regardless of who performs O&M

Utility Energy Service Contract (UESC)

- Prime contractor = local serving distribution utility (electric, gas, or water)
- Performance assurance plan required – savings intended to exceed payments over contract term

Budget-Neutral Solutions

Stop paying for wasted energy and carbon emissions |
Start paying for efficiency, resilience and low/no carbon solutions



Example Energy Conservation Measures (ECMs)

ECMs must produce measurable energy, water, or demand reduction.






Allowable Savings

Energy and water cost savings

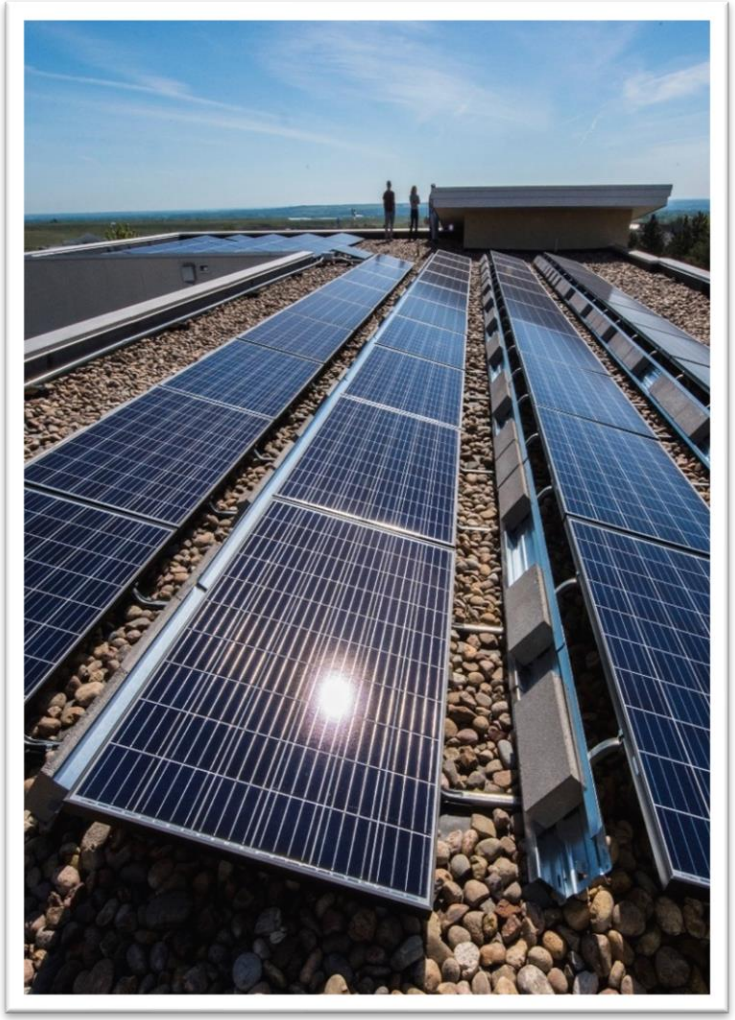
- Efficiency improvements, reduced usage, demand reduction, load management, load shifting, fuel switching, on-site generation, water/wastewater efficiency

Energy- and water-related cost savings

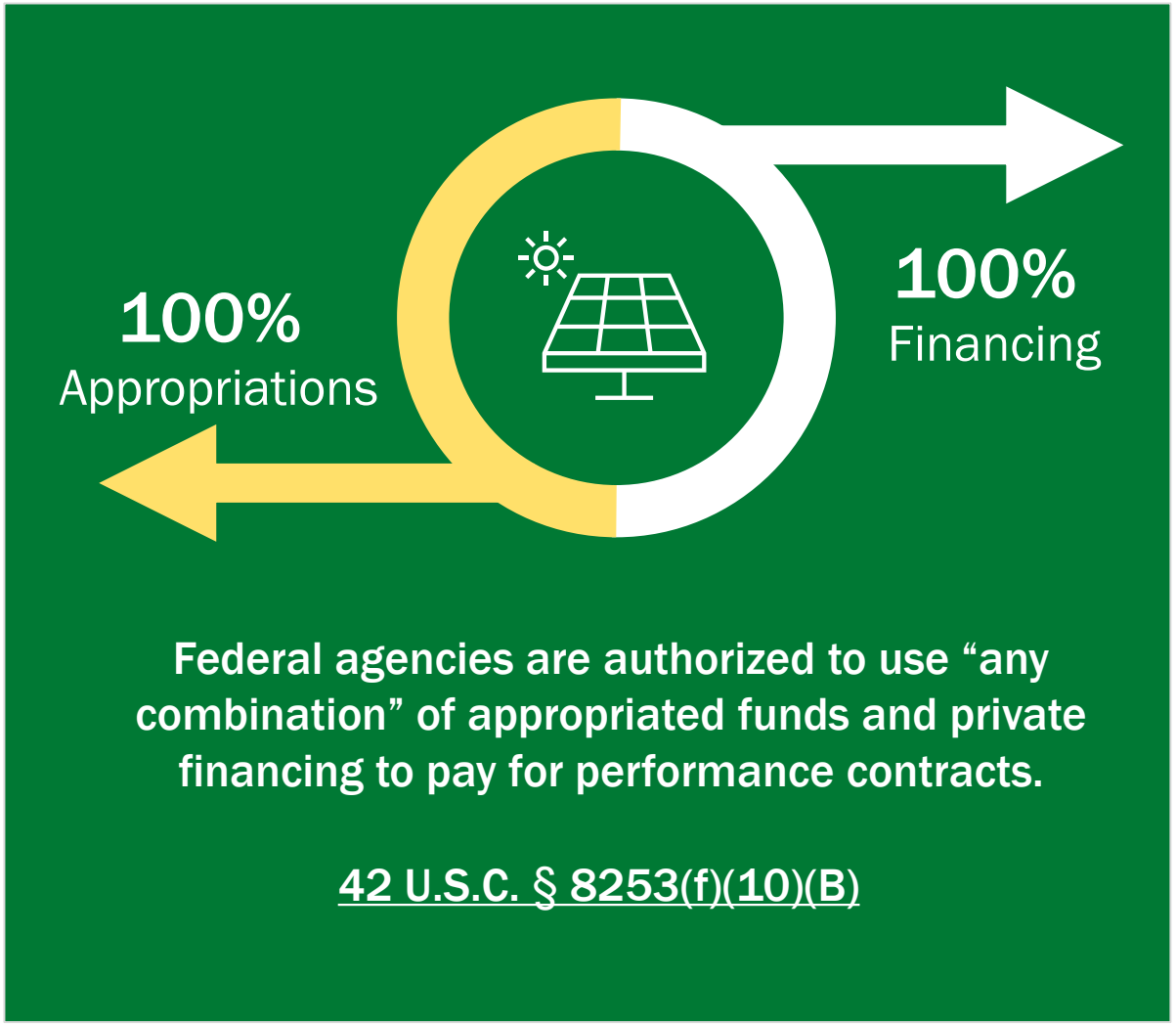
- Reduced O&M costs – contracts, materials

Avoided costs

- Avoided/obviated equipment replacement



Other Funding



Capital contributions and cost offsets can be combined with financing to maximize project investment and impact:

- Pay for project facilitator costs and investment grade audit
- Buy-down contract to shorten term
- Fund ECMs with long payback terms (>25 years)

Capital contributions or cost offsets:

- Appropriations
- Grants – FEMP AFFECT, state, etc.
- Rebates/other incentives
- Renewable energy credit (REC) sales/swaps

Project Process and Key Milestones

1 Acquisition Planning
- Initial SOW
- Acquisition Strategy

2 Utility/ESCO Selection & PA
- Notification of Opportunity or Letter of Interest
- Utility/ESCO Selection
- Preliminary Assessment (PA)

3 Project Development
- Investment Grade Audit (IGA)
- Task Order/Proposal
- Negotiations and Task Order Award

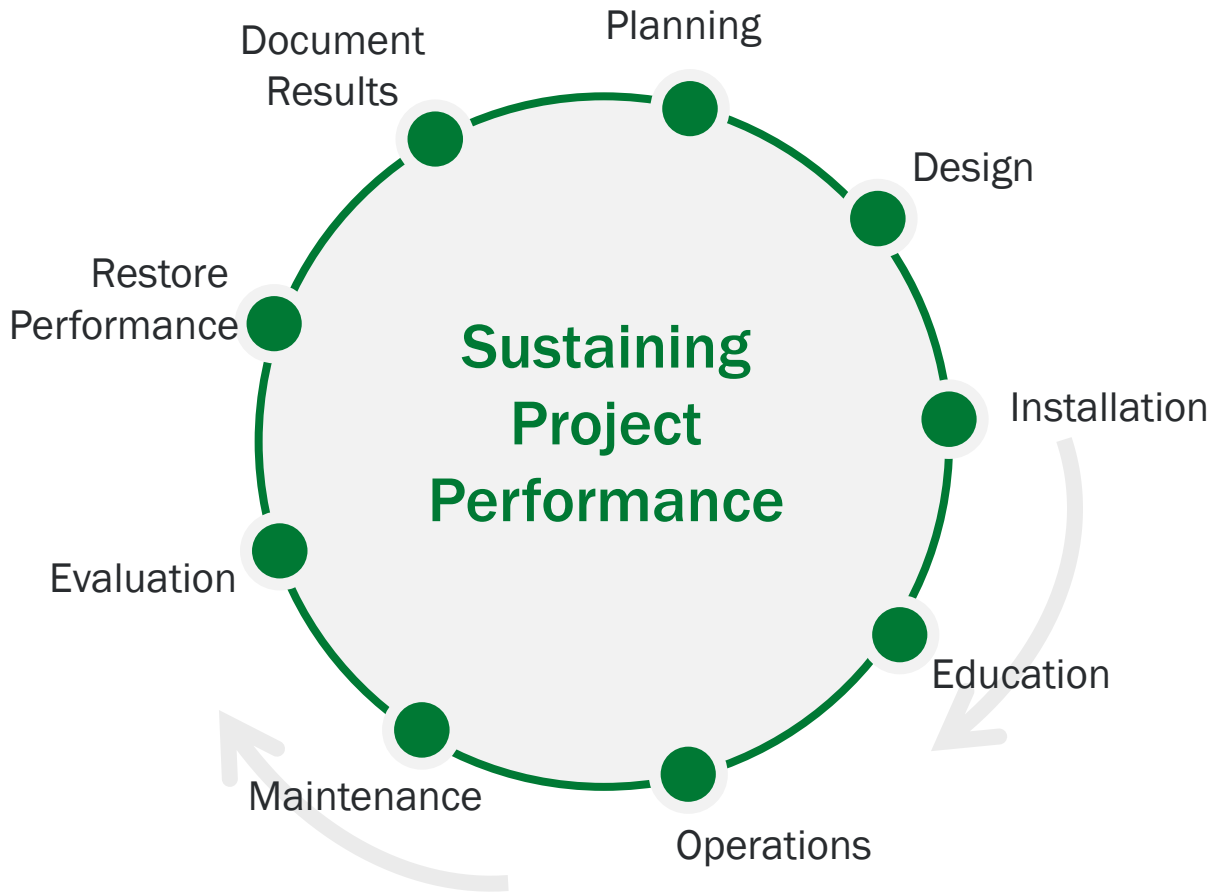
4 Implementation and Construction
- Final Design and Construction
- Commissioning and Performance Verification
- Project Acceptance

5 Post-Acceptance Performance
- Invoicing & Payments
- Post-Acceptance Performance Services (i.e., O&M, M&V, recommissioning/monitoring-based commissioning, etc.)

Project Success = Long Term Savings

Successful performance contracts sustain ECM performance and savings long into the future through

- Performance Assurance Plans
- M&V Protocol
- Recommissioning/monitoring-based commissioning
- Operations and Maintenance
- Annual reporting and documentation



Decarbonization Strategies

Strategy is unique to each site

- Primarily a function of on-site fossil fuel use (Scope 1)
- Influenced by serving utility's current and future generation mix (Scope 2)

Baseline Load

Optimized Load

Step One: Deep energy efficiency and load reduction.

- Lighting, boilers, chillers, and load reduction
- When replacing inefficient fossil fuel-based equipment, begin with load reduction, then electrification and demand flexibility
- Avoid new long-lived fossil fuel burning equipment (boiler, etc.) when possible

Step Two: Electrification (electric vehicles, heat pumps).

- Reduces emissions in most locations
- Largest reductions where current/future utility carbon emissions are relatively low

Step Three: On-site carbon free energy generation / storage.

- Largest emissions reduction where current/future utility carbon emissions are relatively high

Distributed Energy (DE) Procurement Options

Power Purchase Agreement (PPA)

Developer installs, owns, operates, and maintains DE project and agency purchases electricity produced.

- Agency may have option to purchase the system at end of contract
- Developer could be any third-party, including the site's serving utility company
- Stand-alone project, not bundled with efficiency ECMs
- Civilian agencies have limited long-term contract options

ESPC Energy Sales Agreement (ESA)

Uses long-term ESPC authority for DE ECMs on federal site. Privately owned and agency purchases electricity produced (similar to PPA).

- Payment in ¢/kWh, lower than utility rate
- ESCO captures tax incentives to reduce ESA price
- Agency takes title to equipment by end of contract for fair market value
- ESA ECM can be bundled with other ECMs

Privately Financed

Privately Owned

Note: ESAs and PPAs must be legal in your state/utility service territory

Performance Contracting for Decarbonization

Performance contracts offer proven tools for decarbonization

- **Technical Tools**
  - Energy efficiency audits (preliminary assessment/investment grade audit)
  - Energy conservation measures (ECMs) to reduce loads, including deep energy retrofits and renewable energy
  - Electrification by switching from natural gas/other fossil fuels to electricity
  - Load shifting & demand response ECMs to better match load to CFE generation
  - ESPC Energy Sales Agreements (ESAs) for larger on-site renewable generation
  - M&V/performance assurance to ensure savings and emission reductions persist
- **Financial Tools**
  - 3rd party financing for cost effective projects
  - Ability to bundle ECMs and accept one-time payments such as federal or state grants or other funds, one-time savings, and incentives (expanded under Energy Act of 2020)

Project Successes: GSA Region 7 Oklahoma (2020)

UESC Quick Facts:

- **Location:** Five buildings in Oklahoma City and Edmonson, OK
- **Contractor:** Oklahoma Gas and Electric Company (OG&E)
- **Contract Term:** 24.5 years
- **Investment Value:** $8.9 million
- **Avoided Cost:** $412,000 per year
- **GHG Reduction:** 3,100 metric tons/yr.

Energy Conservation Measures:

- LED lighting retrofits and lighting controls
- Building automation system (BAS) optimization
- Advanced metering system integration
- Microgrid controller
- Rooftop solar photovoltaic (PV) system
- High efficiency transformers
- Smart irrigation

Awarded in September 2020, this UESC is expected to result in a 41% drop in energy use across the five buildings, as well as a 13% cut in water use. The project was designed with grid-interactive efficient building strategies as a priority.

Read the GSA News Release

FEMP's ESPC and UESC Resources

www.energy.gov/eere/femp/utility-program-and-utility-energy-service-contracts-federal-agencies

www.energy.gov/eere/femp/energy-savings-performance-contracts-federal-agencies

Essential Education

- Project Implementation and Best Practices
- Case Studies
- Fact Sheets
- On-Demand Webinars

Topic Specific Resources

- DE Screening Tools
- Guidance for Measurement & Verification
- Performance Assurance Planning
- Cybersecurity for Performance Contracts

Access to FEMP Services

Technical Assistance | Training | Events

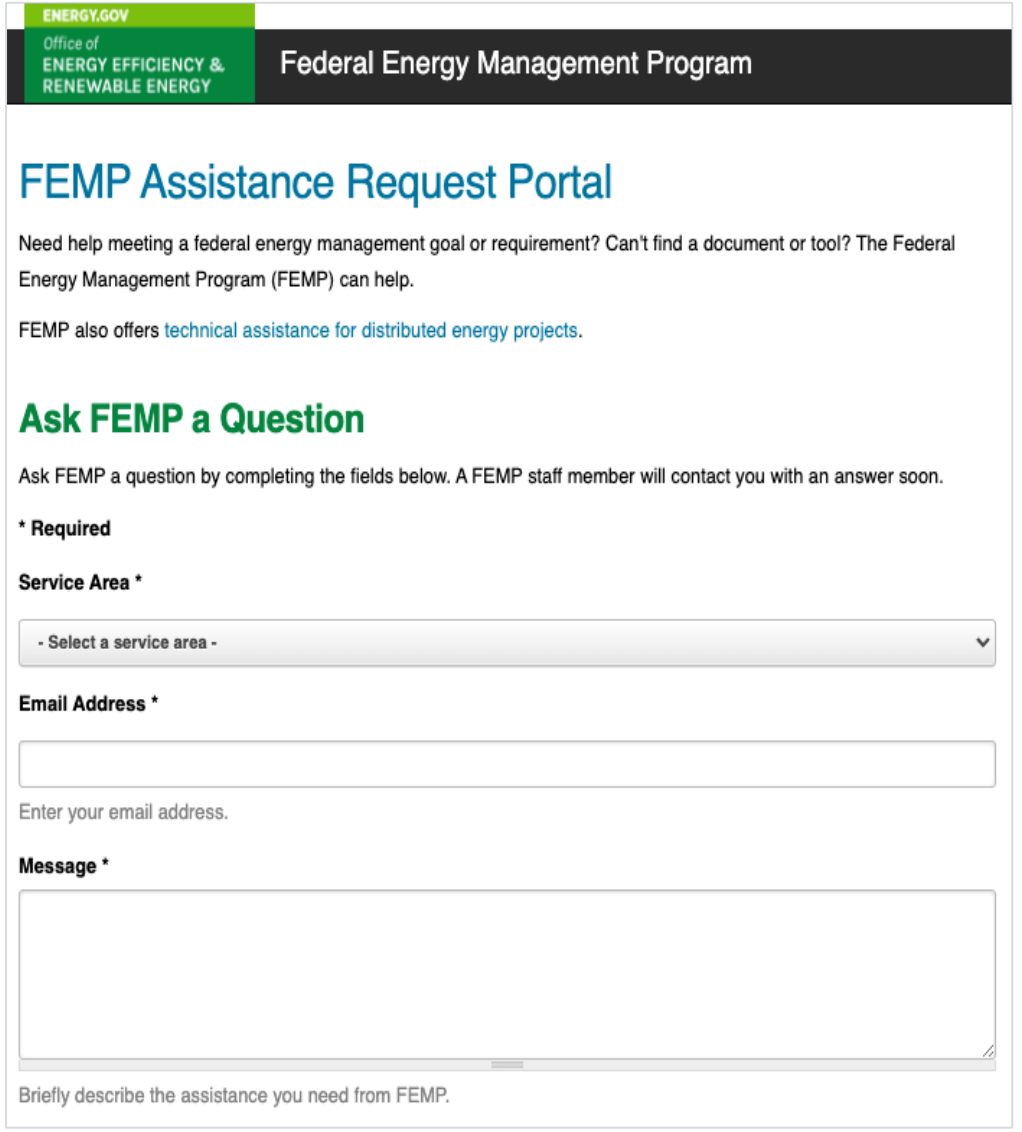
FEMP Project Support

- Project guidance and discussions with Federal Project Executives (FPEs)
- Technical assistance provided by DOE National Labs
- Tailored training for agencies and utilities
- Strategic partnership meetings

Submit questions or requests for support through the

FEMP Assistance Request Portal

(https://www7.eere.energy.gov/femp/assistance/)



Taking the First Step

Talk to the FEMP Federal Project Executive (FPE) in your region for assistance.

energy.gov/eere/femp/energy-savings-performance-contract-federal-project-executives-0

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Open Q&A

Thank you

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